In the claims:

1. (Currently amended) A method of making nanoscale catalyst patterns for an ion exchange membrane, comprising:

i) providing a malleable ion exchange membrane having a top surface;

ii) providing a mold having one or more nanoscale protrusions;

iii) pressing the protrusions into the membrane to form one or more nanoscale recesses in the membrane, each recess having a bottom and side walls ~~between~~, wherein the side walls extend from the top surface of the membrane ~~and~~to the bottom of the recess, each recess further including a lateral dimension ranging from about 1 nm to about 100 nm; and

iv) depositing a layer of catalytic material on the top surface of the membrane and the bottom of the recess.

2. (Currently amended) The method of claim 1[[,]] wherein ~~said~~ the membrane ~~comprising~~ comprises a polymer.

3. (Currently amended) The method of claim 1[[,]] wherein ~~said~~ the membrane is an ion conductive membrane.

4. (Currently amended) The method of claim 1[[,]] wherein ~~said~~ the membrane is a polymer electrolyte membrane.

5. (Currently amended) The method of claim 1, wherein ~~said~~ the membrane ~~comprising~~ comprises a perfluorosulfonic acid polymer electrolyte.

6. (Currently amended) The method of claim 1[[,]] wherein ~~said~~ the mold ~~comprising~~ comprises a substrate~~;~~ and a molding layer including an array of protruding features having nanoscale dimensions.

7. (Currently amended) The method of claim 1[[,]] wherein ~~said~~ the nanoscale protrusions ~~having~~ each have a lateral dimension ranging from about 1 nm to about 100 nm. ~~one nanometerto about 100 micrometers.~~

8. (Currently amended) The method of claim 1[[,]] wherein ~~said~~ the nanoscale protrusions ~~having~~ each have a height ranging from ~~of~~ about ~~one nanometer~~ 1 nm to about 100 ~~micrometers~~ μm.

9. (Currently amended) The method of claim 1[[,]] wherein ~~said~~ the nanoscale protrusions ~~having~~ each have the shape of a pillar.

10. (Currently amended) The method of claim 1[[,]] wherein ~~said~~ the nanoscale protrusions ~~forming~~ form a regular pattern.

11. (Currently amended) The method of claim 1[[,]] wherein ~~said~~ the nanoscale recesses ~~being~~ have the obverse shape of the protrusions.

12. (Currently amended) The method of claim 1[[,]] wherein the bottom of the recess is parallel to the top surface of the membrane.

13. (Currently amended) The method of claim 1[[,]] wherein the side walls of the recess ~~is~~ are perpendicular to the bottom of the recess and the top surface of the membrane.

14. (Canceled)

15. (Currently amended) The method of claim 1[[,]] wherein the side walls remain substantially free of catalytic material.

16. (Currently amended) The method of claim 1[[,]] wherein ~~said~~ the catalytic material is also an electrode.

17. (Currently amended) The method of claim 1[[,]] wherein ~~said~~ the catalytic material comprises a metal.

18. (Currently amended) The method of claim 17[[,]] wherein the metal is platinum.

19 – 33. (Canceled)

34. (New) A method of making nanoscale catalyst patterns for an ion exchange membrane, comprising:

providing a malleable ion exchange membrane having a top surface;

providing a mold having one or more nanoscale protrusions;

imprinting the protrusions into the membrane to form one or more nanoscale recesses in the membrane, each recess having a bottom and side walls, wherein the side walls extend from the top surface of the membrane to the bottom of the recess; and

depositing a layer of catalytic material on the top surface of the membrane and the bottom of the recess.

35. (New) The method of claim 34 wherein the membrane comprises a polymer.

36. (New) The method of claim 34 wherein the membrane is an ion conductive membrane or a polymer electrolyte membrane.

37. (New) The method of claim 34 wherein the membrane comprises a perfluorosulfonic acid polymer electrolyte.

38. (New) The method of claim 34 wherein the mold comprises a substrate and a molding layer including an array of protruding features having nanoscale dimensions.

39. (New) The method of claim 34 wherein the nanoscale protrusions include a lateral dimension ranging from about 1 nm to about 100 μm, and a height ranging from about 1 nm to about 100 μm.

40. (New) The method of claim 34 wherein the nanoscale protrusions each have the shape of a pillar.

41. (New) The method of claim 34 wherein said nanoscale protrusions form a regular pattern.

42. (New) The method of claim 34 wherein said nanoscale recesses have the obverse shape of the protrusions.

43. (New) The method of claim 34 wherein the bottom of the recess is parallel to the top surface of the membrane and the side walls of the recess are perpendicular to the bottom of the recess and the top surface of the membrane.

44. (New) The method of claim 34 wherein the side walls of the recesses each have a depth ranging from about 1 nm to about 100 μm.

45. (New) The method of claim 34 wherein the side walls remain substantially free of catalytic material.

46. (New) The method of claim 34 wherein the catalytic material is also an electrode.

47. (New) The method of claim 34 wherein the catalytic material comprises a metal including platinum.

48. (New) The method of claim 34 wherein each recess has a lateral dimension ranging from about 1 nm to about 100 nm.